Manitoba
Natural Resources

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PLANNING REPORT ON NATURAL RESOURCES

SOURIS-GLENWOOD PLANNING DISTRICT

Technical Report 86-7

PREFACE

Municipal Councils or established Planning District Boards are charged with the responsibility for municipal land use planning and development. This document has been prepared in response to a request from the local municipal planning authority for background material on the subject of natural resources for which the Department is responsible.

This document describes the natural resources in the study area, and identifies Provincial and Departmental concerns and objectives from a land use, development planning perspective. It offers for review, policies and guidelines to remedy, mitigate or anticipate issues and land use problems.

The bases for this report are the Provincial Land Use Policies dealing with natural resources and the policies of Manitoba Natural Resources.

Municipal planning is a consultative process, and the information and policies discussed in this document are offered as advice to the local authority in their land planning deliberations.

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FISHERY RESOURCES

I. PRESENT CONDITIONS/INTRODUCTION

The only significant fisheries in the District are associated with the Souris River and two creeks; Elgin and Plum. No overwintering is possible in the creeks, but fish are able to survive in deeper sections of the Souris River.

The Souris is a fertile river that receives runoff from several tributaries originating within the District. The Souris is plagued by fluctuations in water quality and quantity and supports an unstable sport fishery dominated by bullheads, two species of suckers, northern pike, walleye, and perch (usually in that order). In high flood years (e.g. 1976), fish are able to bypass the series of dams on the Souris River and repopulate the river with fish moving upstream from the Assiniboine River. This rarely occurs as the highest structure, the Wawanesa Dam, forms an effective obstacle to fish movement in most years. Some Souris River fish repopulation can occur from upstream sources such as Lake Darling in North Dakota. Fish tagged in North Dakota have been recovered in Manitoba portions of the Souris River.

In mild winters with above-average flows, fish are able to survive in the deeper holes. This is especially true in the area around Souris.

In low flow years, the portions of the Souris bordering and upstream of the District are very prone to winterkill. Waters are shallow, slow moving or stagnant and periodic, large scale winterkills have been reported in some years. Winterkill is the major factor limiting sport fish potential. Summerkill can also be a problem during, and after, periods of high algae production.

Most fishkills develop when fish suffocate from a lack of dissolved oxygen in the water. Critically low dissolved oxygen levels and reduced water quality are a frequent natural phenomenon in fertile waters that are subjected to long periods of ice cover, deep snow and reduced flow. Oxygen depletion is caused by, in part, bacterial decomposition of organic matter (e.g. aquatic weeds and algae) at a time when excessive ice and snow prevents oxygen input through natural production under the ice or aeration from surface mixing. Shallow waters have a low volume relative to their surface area so the quantity of dissolved oxygen stored in the water before ice cover occurs is usually insufficient to last through typically long winters.

A minimum flow criterion has been specified for the Souris River by the International Souris River Board of Control. A minimum of 20 cfs must be passed within Manitoba during the months of June to October inclusive, except during periods of severe drought when flows can be reduced below 20 cfs. Unfortunately, from a fisheries perspective, the 20 cfs criterion has little relevance to fisheries needs as minimum flows are not designated for spring or winter which are two seasons (spawning and overwintering) most critical to fish survival.

The International Garrison Diversion Study Board noted that periods of low dissolved oxygen occur regularly on portions of the Souris River and are correlated with flows falling below 20 cfs. The relationship between flow and

dissolved oxygen concentration in the Souris River was further demonstrated in recently completed reports relative to proposed dam construction at Burlington and Lake Darling in North Dakota.

The Garrison committee also noted that over the period 1960-1976, the median dissolved oxygen concentration under ice cover at Coulter was 1.8 mg/1 and was less than 0.2 mg/1 for 25 percent of the measurements. Although several factors influence the overwintering success of fish, generally, extended winter periods with oxygen levels below 1.0 ppm are critial for walleye and perch. Also, increasing numbers of northern pike will succumb as winter dissolved oxygen levels fall below 0.4 mg/1.

Fish overwintering is further jeopardized by the practise of log removal from stop log dams prior to freeze-up. This is done to keep the river low to ensure that spring runoff is allowed to get away as quickly as possible.

In May, 1980, Manitoba's representative on the Souris River Board of Control presented Manitoba's concerns relative to low flow and related winterkill. The presentation was well received and U.S. officials indicated they would cooperate whenever possible to provide uninterrupted winter releases. This intent was further reinforced through Manitoba's participation in the Burlington and Lake Darling Dam International Task Forces. However, without other sources of supply, winter releases from Lake Darling in excess of 5 cfs are improbable in many years due to inadequate surplus storage. The proposed Rafferty and Alameda Dams in Saskatchewan may provide the controlled releases and surplus storage required to maintain higher winter flows in Manitoba. This would enhance fish overwintering and thereby assure an improved sport fishery throughout the Souris River system.

Spring flows in Plum Creek are influenced by upstream water levels in Oak and Plum Lakes. Only in high flow years are surplus waters available to provide an attraction flow for Souris River pike and sucker spawners. A prolonged flow of about six weeks is required on Plum Creek to provide time for spawning, hatching and downstream movement of adults and fingerlings to the Souris River. In some years, eggs, adult fish and/or fingerlings are stranded in deeper portions of Plum Creek due to inadequate flows.

Pike and suckers are known to spawn a short distance above the Souris River on Elgin Creek. Again, the spawning response varies with fish availability and flows.

The Souris Golf Club has expressed an interest in a water retention project on Elgin Creek that would serve as a water source for golf course irrigation and walleye fingerling rearing. Although water quality in the Souris River has been enhanced by the recent improvements to the wastewater treatment plant in Souris, a high winterkill threat still remains which makes the value of such a project questionable.

II. CONCERNS/OBJECTIVES

Intermitent flows, erosion and siltation, nutrient loading and drainage have impacted water quality and fish stocks in the Souris River and its tributaries. Any factors that adversely influence water quality or quantity can adversely influence fish populations. Since demand is high and fishing opportunities are few, existing fisheries and upstream watersheds should be protected from

nutrient loading and contamination.

Fish are a renewable resource and it is incumbent upon all governments to ensure the provision of a suitable habitat that will assure continuing fish stocks for the long term benefit of all Manitobans.

Specifically, the fisheries concerns/objectives are:

1. To ensure the survival or improvement of fish stocks, subject to the effects of natural environmental changes and approved man-made environmental changes. Fish habitat associated with the Souris River, Plum Creek and Elgin Creek should be protected.

2. To maintain, enhance and diversify angling opportunities to Manitobans to meet existing and future demands.

3. To promote communication and cooperation between private landowners, industry, the public, local government and Manitoba Natural Resources so as to achieve high standards of conservation practices.

III. POLICIES/GUIDELINES

Although fisheries habitats are being stressed and have been reduced, what remains can be retained and enhanced by judicious use of land and water in the Planning District. In order to achieve the fisheries objectives and to mitigate and alleviate concerns, the following apply:

1. Fisheries habitat, spawning sites and nursery areas should be protected.

   1a) Ditching and stream rechannelization, whenever practicable, should not be permitted in direct tributaries to the watershed capable of supporting spawning and nursery habitat. The construction of dykes as opposed to channel deepening and straightening shall be encouraged. Measures to limit nutrient and sediment inflow shall be encouraged.

   1b) Land clearing, cultivation and development to the edge of significant waterways shall be prohibited. Development or maintenance of appropriate vegetative cover along waterways to prevent erosion, siltation and reduce runoff shall be encouraged. Where possible a buffer strip of natural vegetation 91.5 metres (300 feet) wide from the ordinary high water mark shall be maintained along the watershed. As a minimum, buffer strip widths should be 12 m (40 feet) plus 1.5 times slope gradient (%), along each side of the stream.

2. Shorelines subject to intensive use and development should be protected from excessive erosion and organic loading. Activities that discharge pollutants shall be restricted in their location and it may be required that precautionary safeguards that mitigate the pollutant be incorporated into the development activity.

3. The right of public access to fishing waters shall be maintained in accordance with such acts, regulations and contracts that are in effect from time to time.

IV. IMPLEMENTATION

The objectives and policies with respect to fisheries shall be implemented as follows:

1. By assistance and advice on conservation practices by the staff of Manitoba Natural Resources.

2. By public and private cooperation through management and development agreements.

3. By the Council through the judicious use of restrictive zoning bylaws, subdivision control procedures and the issuance of development permits.

FORESTRY RESOURCES

I. PRESENT CONDITIONS/INTRODUCTION

The Souris-Glenwood Planning District lies within the Aspen Parkland Forest Section, specifically Forest Management Unit 06 as defined in the 1980 Manitoba forest inventory classification system. The Forest inventory on the area was completed in 1986. Both Crown land and private land forest inventory information is available and should be of benefit to landowners in the area. Field forest measurements that were required on private lands to complete the forest inventory were only done with permission from the landowners.

For areas in close proximity to population centres, landowners with forested land on their holdings might consider growing trees as a crop, such as fuelwood for example. This is particularly true for land unsuitable for other agricultural purposes but still capable of supporting tree growth.

While trees and forests have value as a renewable cash crop, their presence is valuable in other ways. These include control of precipitation runoff and retarding snow melt to lessen flood risk; erosion control both water and wind; a habitat for wildlife; and recreation opportunities for people. Furthermore, forest harvesting operations can be done in a manner that will enhance all forest values; however, it is essential that fire be kept out, destructive grazing be avoided, and any utilization or disposal of elm trees be in conformance with The Dutch Elm Disease Act and Regulations.

II. CONCERNS/OBJECTIVES

Principal Objective:

To effectively manage and protect forested lands, and to maintain and enhance the overall benefits accruing from the forest resource.

Specific Objectives:

1. To sustain the integrity of the forest land base in Manitoba and to maintain the forest resource in a healthy and productive state.

2. To encourage responsible use and husbandry of the forest resource, to obtain maximum achievable net benefits including employment and recreation opportunities, sound land use practices and soil conservation.

3. To assist in the creation and sustenance of self-supporting industries by providing appropriate tenure and access to a forest resource managed under sustained yield practices.

III. POLICIES/GUIDELINES

The general policy applying to forests on Crown land is to improve sustained yield and intensive management practices beginning with the more productive and accessible forest sites in the Province as economic conditions and funding support permits.

The general policy applying to forests on private land is to encourage efficient and effective utilization of these timber resources as cash crops, and as a soil conservation land use technique for controlling erosion, etc.

IV. IMPLEMENTATION

The objectives and policies as outlined shall be addressed and implemented as follows:

1. By the Board and/or Councils through the judicious use of restrictive zoning by-laws, subdivision control procedures and the issuance of development permits which recognize the intent of the concerns and objectiv s identified.

2. By encouraging good forest management practices on all forested land.

3. By maintaining the integrity of the forest land base.

4. By assistance and advice on conservation practices by staff of Manitoba Natural Resources and by public and private co-operation through management and development agreements.

OUTDOOR RECREATION

I. PRESENT CONDITIONS/INTRODUCTION

Parks Branch interests in the Planning District are minor with respect to both existing facilities and proposed development in the future.

Lands in the higher Canada Land Inventory Classes (1, 2 and 3) for recreation are absent from the District. However, lands having moderate capability for outdoor recreation (Class 4) do occur along the Souris River south and east of the Town of Souris, in Sections 33 through 35 in Township 7-21W, and along Plum Creek in Section 7-8-22W (Map 1). Lands with moderately low capability (Class 5) occur along the rest of the Souris River valley, and in Sections 1 and 12 in Township 8-21W. These lands are suited for such forms of outdoor recreation as hiking, camping, canoe tripping, nature study, and viewing natural and man-made aspects of the landscape. In the Town of Souris, visitors are attracted by the suspension bridge and the rock quarry.

Only one parcel of Crown land (part of Section 11-7-20W) is located in these areas. In general, only a low level of development is warranted for recreational purposes.

II. CONCERNS/OBJECTIVES

The future development of the Planning District should undertake to maximize its potential for outdoor recreation by maintaining or enhancing environmental quality and preventing conflict between outdoor recreation resource use and other, incompatible uses of the same or adjacent lands. In this respect, the physical and natural resources of the area dominate.

The identification, maintenance and protection of the basic resource is most important. Once identified, higher quality lands should be designated in whole or part for recreation purposes, and development activities which would tend to degrade these lands should be prohibited. Areas of highest potential for present and future recreation opportunities--lands in C.L.I. Classes 4 and 5, and attractive sites in Souris--must be safeguarded through policies which are sensitive to and supportive of outdoor recreation. If these valuable resources are disrupted or damaged by conflicting developments, the recreation opportunities and benefits will be degraded, very likely permanently.

The following are specific concerns/objectives:

1. Lands having better recreational capability or attractive features (as noted above) should be regulated through resource use policies which give a high priority to outdoor recreation.

2. The sensitivity of the resource to development should be considered. Development should only be allowed to the carrying capacity of the resource.

3. Recreation lands must be afforded protection from adjacent land uses which would diminish recreation opportuinities in quality or quantity.

4. The benefits to the community from local recreation opportunities must be maintained or enhanced. These benefits comprise both economic benefits and in the provision of a wide range of outdoor recreation opportunities to local residents.

5. The right of public access to recreation opportunities must be maintained or improved.

6. Areas having higher recreational potential must be protected from unplanned, sporadic residential development.

7. Major road access corridors to recreation areas should be identified and afforded protection in order to maintain the integrity of the recreation opportunities.

III. POLICIES/GUIDELINES

1. Lands identified as having relatively good usefulness or capacity for outdoor recreation should be recognized and consideration given to their development for recreation. Other land uses may be allowed, but these other uses must be considered in light of their potential effects on outdoor recreation interests.

2. Where sites are given enhanced suitability through development, such as the construction of wayside, camping, interpretive, visitor service, or other facilities, resource and land use policies applying to these lands should reflect their priority to outdoor recreation.

3. Control will be exercised in the approval of seasonal or permanent rural residential development. It may be desirable to separate such developments from prime recreational areas. Specific areas for future cottage or rural residential development should be identified and promoted in order to reduce uncontrolled development. Scattered or random residential development would generally be in conflict with priority outdoor recreation sites. Permanent non-farm or seasonal residences would generally not be allowed in these areas outside of planned or designated sites; existing residences of these types in these areas should be identified as non-conforming uses.

4. Existing areas and routes of public access shall be recognized and maintained or improved. Development policies respecting lands adjacent to and along access roads to recreational areas shall not permit the quality of the recreational opportunity to be degraded or endangered. Strip development along provincial and major municipal roads shall not be allowed in these areas.

5. The Planning District shall encourage the development and growth of outdoor recreation enterprises and service functions which are compatible with the character of the community and the nature of the recreational area, and which provide a source of enjoyment.

6. Agricultural land use practices and policies applying to areas within or in close proximity to important outdoor recreation areas shall not adversely affect the recreation opportunities. Equivalent limitations shall apply to other land use practices in these areas.

IV. IMPLEMENTATION

The objectives and policies can be achieved by means of appropriate zoning by-laws, conditions of subdivision approval and building permits.

Consultation with staff of Manitoba Natural Resources is encouraged.

WATER RESOURCES: GROUNDWATER

I. PRESENT CONDITIONS/INTRODUCTION

Groundwater availability in the District varies over a wide range; in some parts of it a large quantity of fair to good quality groundwater is readily available and in others the supply is minimal and quality very poor. The major topographic and subsurface features of the District are depicted in Figure 1.

Groundwater is readily available from shallow sand aquifers in the northwestern part of the District (Tp. 8 - Rge. 22W) (Map 2). The potential yield of these aquifers ranges from 0.5 L/s to more than 20 L/s (6 - 250 I.G.P.M.).

Groundwater is fairly readily available in a three to four kilometre wide zone along the north side of Highway No. 2 east of Souris. The aquifer there is formed by a more or less continuous deposit of sand and gravel. In general, the yield of the aquifer is from 1.0 to 2.0 L/s (13 - 26 I.G.P.M.), but at the western end of it the sustained pumping rate could be up to 16 L/s (200 I.G.P.M.). Groundwater quality in this aquifer is fair to good.

In the rest of the area north of Highway No. 2, aquifers are formed by scattered lenses of sand, gravel and fractured zones in the shale bedrock. Water supply from these aquifers generally is satisfactory for domestic and farm supply.

In the area south of Highway No. 2 the most common aquifers are fractured shale zones in the hard shale bedrock. The yield of these aquifers generally is low and often only minimal domestic and farm supply can be obtained. Water quality in most of these aquifers is poor. Saline and slightly saline water is common in the deeper shale aquifers.

In extensive areas in the northwestern part of the District and several other areas elsewhere in the District the aquifers are exposed or are overlain by only a thin layer of low permeability materials. In these groundwater pollution hazard areas, aquifers are subject to infiltration of pollutants from the surface. (Map 3).

II. CONCERNS/OBJECTIVES

The total groundwater supply in the District is adequate for present requirements and for some future development. The groundwater resources, however, are not uniformly distributed; in some areas the supply is abundant and in others very minimal. Outside of the Town of Souris, groundwater is the principal source of water supply. Hence the overall concern is groundwater resource management and protection to assure adequate supply for existing users and for potential development. In most of the eastern half of the District the aquifers developed for water supply are overlain by sufficiently thick low permeability surficial deposits to prevent pollution of the aquifers. However, in extensive areas in the western half of the District the aquifers are at a shallow depth and are subject to pollution by infiltration from the surface. These latter areas are considered to be groundwater pollution hazard areas.

Objectives

1. To manage the aquifers in a manner that would not deprive existing users of their water supply and would not have a detrimental effect on aquifer potential in the District.

2. To maintain groundwater withdrawal within acceptable limits.

3. To prevent aquifer pollution.

III. POLICIES/GUIDELINES

1. Intensive development and high capacity wells should be permitted only in areas where they will not cause a reduction in water supply for existing users.

2. Groundwater consumption should not exceed the total sustained yield of an aquifer.

3. Wells should be installed in a manner that would not have a detrimental effect on aquifers.

4. Activities that may cause groundwater pollution under normal operating operating conditions or by accident should not be permitted in the groundwater pollution hazard areas unless it can be proved by adequate field investigations that the proposed activities will not cause pollution of existing or potential groundwater supply in the area.

IV. IMPLEMENTATION

1. Aquifer management is implemented by the Water Resources Branch of Manitoba Natural Resources under the provisions of the Groundwater and Water Well Act and the Water Rights Act.

2. Well construction in respect to prevention of detrimental effect on aquifers is regulated by the Water Resources Branch of Manitoba Natural Resources under the provisions of the regulations under the Groundwater and Water Well Act.

3. Aquifer pollution prevention is implemented by the Environmental Management Division of Manitoba Environment and Workplace Safety and Health.

WATER RESOURCES: SURFACE WATER

I. PRESENT CONDITIONS/INTRODUCTION

The Souris-Glenwood Planning District is situated in the Souris River drainage basin. The Souris River flows in an easterly direction through the south half of the District. The Souris and its major tributary in the District, Plum Creek, drain most of the area. The northeast corner is drained by the Little Souris River (Map 4).

Serious flooding occurs in the Souris River valley throughout the District. Flood risk maps of the Town of Souris have been prepared under the Canada-Manitoba Flood Damage Reduction Program and the extent of the flood risk area along the remainder of the River is shown on the 1976 flooded area map. In addition to major flooding on the Souris, local drainage problems and flooding adjacent to smaller waterways limit development in some areas, as does riverbank erosion and bank instability on streams and valley embankments.

II. CONCERNS/OBJECTIVES

Development or unsuitable agricultural practices on hazard lands can lead to acceleration of environmental damage, interference with natural processes, public expenditures for remedial works or assistance, waste of resources and personal loss and hardship. In order to mitigate these concerns the following objectives are established.

1. To minimize personal hardship and inconvenience, adverse affects on public health and loss of life;

2. To minimize property damage and public expenditures for relief or protection in areas subject to flooding, water erosion, wind erosion, bank instability, landslide or subsidence;

3. To restrict activities which would accelerate or promote damages arising from causes such as erosion or bank instability;

4. To acquire access to all waterways in order to carry out public work projects when required;

5. To maintain the natural capacity of the streams to convey flood flows;

6. To encourage the preservation of natural vegetation along the banks of waterways.

III. POLICIES/GUIDELINES

1. Development in areas which, in the opinion of the Board or Council, may be subject to physical hazards shall generally be limited to agricultural or open space uses. Under special economic or social circumstances the Board or Council may permit more intensive development if the hazard is eliminated or protected against. Development in hazardous areas shall be subject to the following requirements:

a) If the land is subject to flooding all permanent structures must be located on land which has been raised by fill to an elevation at least 0.6 metres above the 100 year flood level.

b) Land which may be eroded away within a period of 50 years must be excluded from development unless it is demonstrated, to the satisfaction of the Board or Council, that the erosion process has been halted.

c) Development shall not be permitted on lands subject to bank instability, landslides or subsidence.

d) All structures and services shall be protected against damage and shall be functional under hazard conditions.

2. Notwithstanding (1) development will not be permitted if, as a result of the development;

a) there is an added risk to life or safety;

b) water flow, flow velocities or stages are adversely altered; obstructed or increased; or

c) the minimum depth of flooding exceeds 1.0 metre.

3. Activities such as dumping, excavation, clearing, cultivation, or excessive grazing would accelerate or promote dangerous erosion or bank instability will be prohibited.

4. In areas where the specific hazard has not been defined, permanent structures shall be set back from all waterways a distance of at least 10 times the height of the bank above channel grade or 60 metres, whichever is greater, unless an engineering investigation shows that these limits may be reduced.

IV. IMPLEMENTATION

The Policies shall be implemented by means of, variously, zoning by-laws, conditions of subdivision approval, the issuance of development permits and building permits, development agreements and such programs as are determined from time to time by the Board or Councils to be necessary and not in conflict with the provisions of any part of the Plan.

WILDLIFE RESOURCES

I. PRESENT CONDITIONS/INTRODUCTION

The Planning District is situated in what is known as the glacial Lake Souris Basin, a more or less flat, broad expanse of landscape which extends well beyond the borders of the District. Soils in the area are derived from lacustrine sediments which have evolved to generally light textured sandy soils, particularly north and west of Souris near Plum Creek. Soils in the western part of the District are the lighter textured Souris Loamy Fine Sand and Souris Fine Sandy Loam. In the southeast part of the District, soils tend to be more gravelly and of the Heaslip Textured Complex, a mixture of gravelly till weathered shale and water-laid deposits. North of the Souris River where the landforms are more undulating in nature, soils are of the Carrol Loam, Carrol Clay Loam or Beresford Clay Loam types, all basically lacustrine in origin.

Topography south of the Souris River is generally flat, with very little relief except for local small drainages. North of the river there is more variance in relief with a fairly extensive area of stabilized sand dunes northwest of Souris and low, rolling topography in the eastern part of the District.

The valley slopes of the Souris River and the small tributary streams are largely forested with a mixture of trees and shrubs. The uplands are characterized by extensive agricultural use, and unbroken treed areas are only found on the rougher topography, the sandy duned area northwest of Souris or in the small creek drainages.

Most of the unbroken upland areas are pastured, largely due to soil fertility or topography, rather than under cultivation.

The soil capability for agriculture in this area is generally quite good, particularly south of the Souris River and north and east of the river where probably three townships are either Class 2 or 3. North and west of the Souris River, where the soil is sandier in nature, the bulk of the land is Class 4 with pockets of Classes 3 and 5 scattered through the area. The most valuable area to wildlife, particularly big game, is the Souris River Valley and the area northwest of Souris.

Wildlife Populations

Population figures for all species of wildlife are unavailable for the District since no ground or aerial surveys have been conducted in the area. General comments on specific species or groups of species follow.

White-tailed Deer

Canada Land Inventory ungulate capability maps for this area note most of the land in the District as Class 5 or 6 (Map 5). North of the Souris River, where natural tree cover is more prevalent, there are scattered pockets of Class 4 land. The most highly rated area for deer is the Souris Valley itself, which is Class 3. Since most of the area is under intensive agriculture, habitat is simply not sufficient to support high deer populations, even though in summer they probably occur all over the area. In winter, however, deer require wooded

cover for thermal protection from the elements and this is lacking except along the river and on scattered larger blocks of bush associated with the sandhill areas or rougher topography. There is no way of even estimating the population of deer for the District without extensive sampling and an aerial survey. Considering the current land use and overall terrain, it certainly cannot be considered high, although midwinter aggregations may lead one to suspect there are many deer in the District.

Elk, Moose and Black Bear

Elk are a relatively recent newcomer to the area and are certainly not found in large numbers. In recent years, the public have reported seeing single, or at least very small groups of elk in two main areas; along the Souris River in the eastern part of the District near Bunclody, and in the sandhills northwest of Souris. These animals appear to be transients and will roam through similar habitat/terrain in adjacent municipalities.

Moose are periodically reported travelling through the area, but no local populations are known to exist. Similarly, black bears periodically are reported as a result of a brush with livestock or depredation on beehives. These animals are undoubtedly transients, probably originating from Riding Mountain National Park; nowhere in the District are bears known to reside year round.

Waterfowl and Wetlands

Virtually all of the District is rated by the Canada Land Inventory System as being very poor for its capability for waterfowl - mostly Classes 4, 5, and 6. One small pocket of about 8 square miles in the north central part of the District is rated Class 2 and about three quarters of a township south of the Souris River in the Menteith area is rated as Class 3. The remainder of the District simply does not have much in the way of wetlands.

There are no large marshes or significant wetlands in the District, just small semi-permanent ponds here and there, thus the relatively low classification.

Ducks are most notable in the late fall along the Souris River when other smaller ponds and sloughs are frozen. Geese are very common in the southern part of the District during September and October. Most of the birds observed here at that time stage on Whitewater Lake to the south and make extensive field feeding flights northwards into this area as the hunting season progresses. There are no major concentrations or staging areas or marshes capable of substantial production, since wetlands are relatively few in this area.

Furbearers

Furbearer populations throughout the District are probably quite low due to the overwhelmingly agricultural land use and the lack of wetlands. Mink, beaver and muskrat can be associated with the Souris River or other small stream courses or permanent wetlands. Coyotes and foxes are found in low numbers through the entire area; foxes in the open areas and coyotes confined to the areas of rougher terrain and bush cover. In treed areas, species such as red and gray squirrel, badger and weasel are likely to be found.

Information at hand on non-game birds and animals is virtually unavailable. There are undoubtedly many species of song birds and small mammals found in the areas of treed cover, along roadsides, etc. There are no known populations of any species of significance or that could be considered rare and endangered. It is very possible that the burrowing owl is a resident of this area, particularly north and west of the river. Other raptor species are likely found nesting along the river where excellent tree cover exists.

Upland Game Birds

The sharptailed grouse is probably the most common species in the area and likely found in small groups over much of the District, depending on land use. Certainly, the area north and west of the river is more attractive to sharptails than the extensive grassland south of the river. Ruffed grouse are likely found along the river and in the more extensive treed areas in the northern part of the District. Hungarian partridge, never a very plentiful bird, occurs on the farmlands and in rough areas next to roadsides, farmsteads and grain fields.

Wildlife Lands

At the present time there are no Wildlife Management Areas or Wildlife Refuges in this District although a request has been forwarded to designate a part of Section 11, Township 7, Range 20W as a W.M.A.

Wildlife Projects

Ducks Unlimited (Canada) and the Manitoba Wildlife Federation do not have any projects on patented land in this District.

Wildlife Issues/Concerns

Wildlife does not cause many problems to landowners in this District, but each year N.R.O.'s action complaints of damage caused by beaver, mainly associated with Plum Creek; deer depredation, scattered over the District; or waterfowl damage to scattered crops. The geese that frequent the southern part of the District in late fall generally do not cause much damage, probably because crops have been harvested prior to their flights to the area. Duck damage does occur in the extreme northern end of the District, principaly by flocks of birds which fly to the area from the Alexander-Griswold Marsh near P.T.H. #1. The numbers of complaints of each type are generally low each year and are not significant enough to be of real concern.

Recreational Aspects of Wildlife

The most notable (or, at least, identifiable) group of users of wildlife are hunters, primarily deer and waterfowl hunters. It is assumed that many rural and town residents enjoy wildlife and seeing numerous species of birds and animals in their local areas, in spite of an overall scarcity of wildlife habitat in the District. Some local residents, as members of the Glenwood Game and Fish Association, were concerned about deer during the winter of 1984-85 when they assisted in feeding local deer herds under the provincial emergency deer feeding program.

II. CONCERNS/OBJECTIVES

Given that information on wildlife populations in the District is very general, the following objectives and policies are suggested:

1. To maintain wildlife populations at existing levels, particularly on poorer quality land.

2. To promote programs and legislation to maintain wildlife habitat on private land, unused road allowances, and Crown land.

3. To promote communication and cooperation between local residents and the municipal council, government departments (particularly the Wildlife and Regional Services Branches of D.N.R.), the Manitoba Wildlife Federation, Ducks Unlimited (Canada), etc., so as to achieve an active program of conservation of habitat and wildlife resources within the District.

4. To promote all possible uses of wildlife within the District; trapping, hunting, wildlife viewing and wildlife appreciation.

III. POLICIES/GUIDELINES

1. The District should protect from clearing all shrub or tree cover on all lands with an agricultural capability of Classes 4, 5, and 6.

2. The District Board should be encouraged to curtail road development and to embark on an active program of establishing "Conservation Corridors" on unused road allowances.

3. Landowners should be encouraged to retain natural marshes and ponds in their native condition, rather than attempting to drain them.

4. Areas prone to waterfowl or deer depredation should be identified and landowners encouraged to work cooperatively with N.R.O. staff of Manitoba Natural Resources to minimize losses.

IV. IMPLEMENTATION

The objectives and policies of the District with respect to land use and wildlife resources should be implemented as follows:

1. By assistance and advice on conservation practices from Manitoba Agriculture and Manitoba Natural Resources.

2. By public and private cooperation through management and development agreements.

3. By the adoption of zoning bylaws or legislation passed by Municipal Council.

4. Through the control of issuance of development permits where applicable.

CROWN LANDS

INTRODUCTION

This section describes the Crown lands in the Planning District, providing an inventory of Crown lands and present commitments. Additionally, this section will discuss the authority for Crown lands, the legal aspects thereof and the planning and administration of Crown land.

DEFINITION

Crown land, for the purposes of this section, is defined as all land under Order-in-Council designated as: Provincial Park, Provincial Forest, Ecological Reserve, Wildlife Management Areas, and Community Pasture, plus all other land administered by Manitoba Natural Resources and Manitoba Agriculture under 'The Crown Lands Act'. In addition, all waterbodies, streams, rivers, and creeks are considered Crown lands except where original title has confirmed the lake bed or stream bed to an individual.

ACTS AFFECTING CROWN LANDS

There are a variety of acts which affect the administration and management of Crown lands. For the purposes here, the principal acts which govern use and management of these lands are:

1. The Crown Lands Act,
2. The Fisheries Act,
3. The Forest Act,
4. The Provincial Park Lands Act,
5. The Water Power Act,
6. The Rivers and Streams Act,
7. The Wildlife Act, and
8. The Water Resources Administration Act.

MANAGEMENT AND ADMINISTRATION OF CROWN LAND

The actual management and administration of Crown land is shared between two Departments of Government, Manitoba Natural Resources and Agriculture. Agricultural Crown Lands has been assigned the functions and related administration pertaining to the issuance of agricultural leases and permits of occupation or use of those Crown lands which are designated as:

1. primarily agricultural lands, and,

2. multiple use lands which may only be used for agricultural purposes on an interim or secondary use basis, subject to specific conditions and covenants required by other resource users.

The principle responsibility for Crown land remains with Manitoba Natural Resources, which administers The Crown Lands Act, excepting those specific sections under the responsibility of the Minister of Agriculture.

The Minister of Natural Resources is responsible for administration, direction and control of the surveys of Crown lands. Survey monuments defining Township, Section and Quarter Section corners have been established throughout the Planning District.

The protection of the township survey fabric, the primary function of which is to support the transferring of rights in land via The Real Property Act or The Crown Lands Act, is essential to efficient and effective land administration. No system purporting to give evidence of the ownership of land is complete if one cannot determine what land is being conveyed or where its boundaries are located. Boundaries, once defined, are matter of law and the survey monument is the vital link between the ground and the administrative record.

CROWN LAND CLASSIFICATION AND PLANNING

Crown land is exempt from The Planning Act and is under the jurisdiction of the Manitoba Government as governed by the various acts of the Legislature mentioned above.

The classifying to use of Crown land in the southern portion of the Province is the responsibility of the Crown Land Classification Committee, (CLCC). This is an Interdepartmental Committee with representation from the Departments of Agriculture, Natural Resources, Northern Affairs and Municipal Affairs. The CLCC reports to and receives their direction from the Provincial Land Use Committee of Cabinet.

In carrying out this responsibility, the CLCC has established Bloc Planning Committees (BPCs). These BPCs have regional representatives from Manitoba Agriculture, Natural Resources, Northern Affairs and Municipal Affairs. The BPCs provide field recommendations, in effect, providing to the CLCC preliminary land use plans for their consideration of Crown lands. They are not, however, final plans. The Crown Land Classification Committee requires that all such plans must be reviewed and commented on by Local Councils and/or Planning District Boards. It is only after such review and appropriate adjustment, if necessary, that a final Crown land plan is prepared.

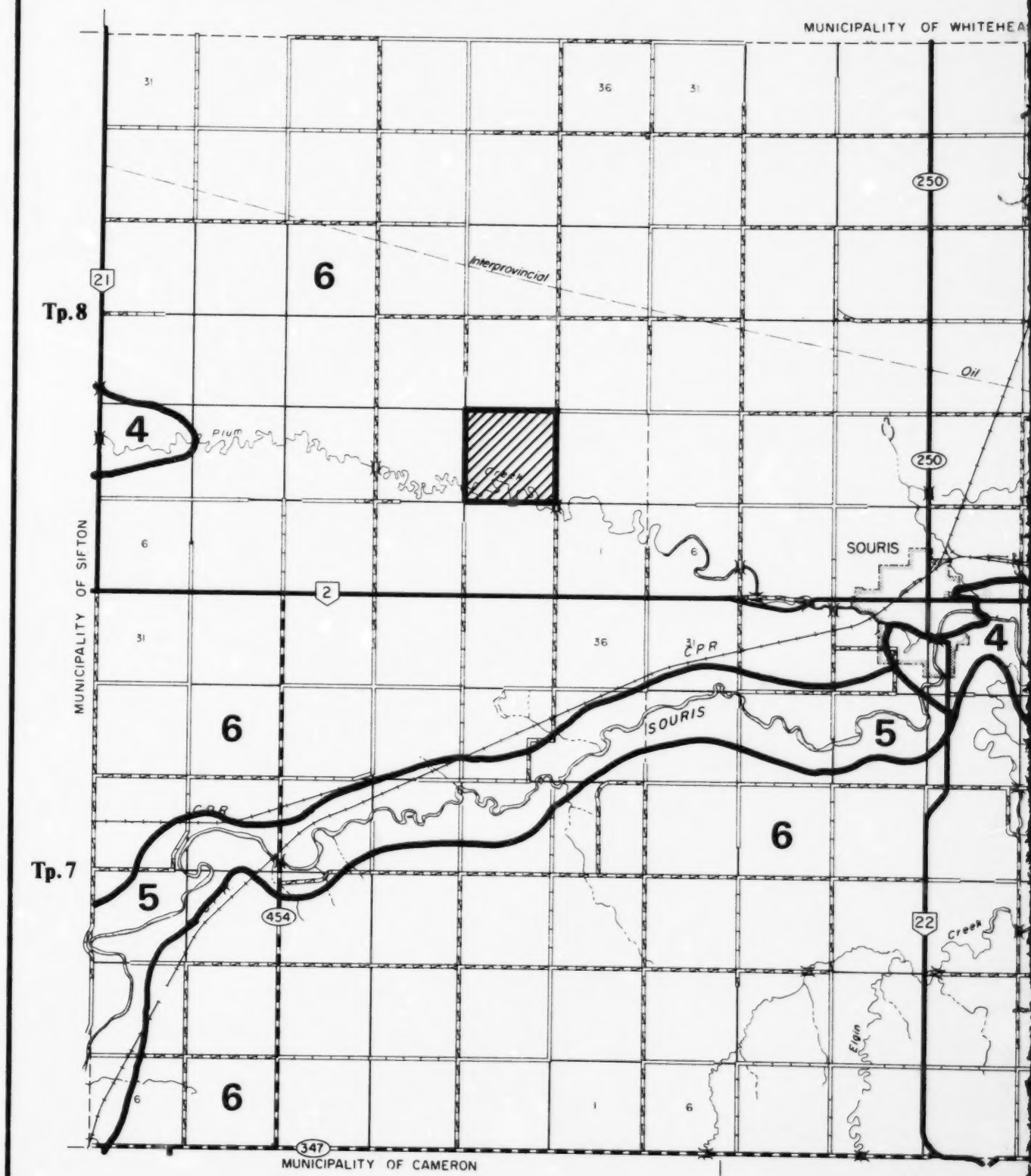
INVENTORY

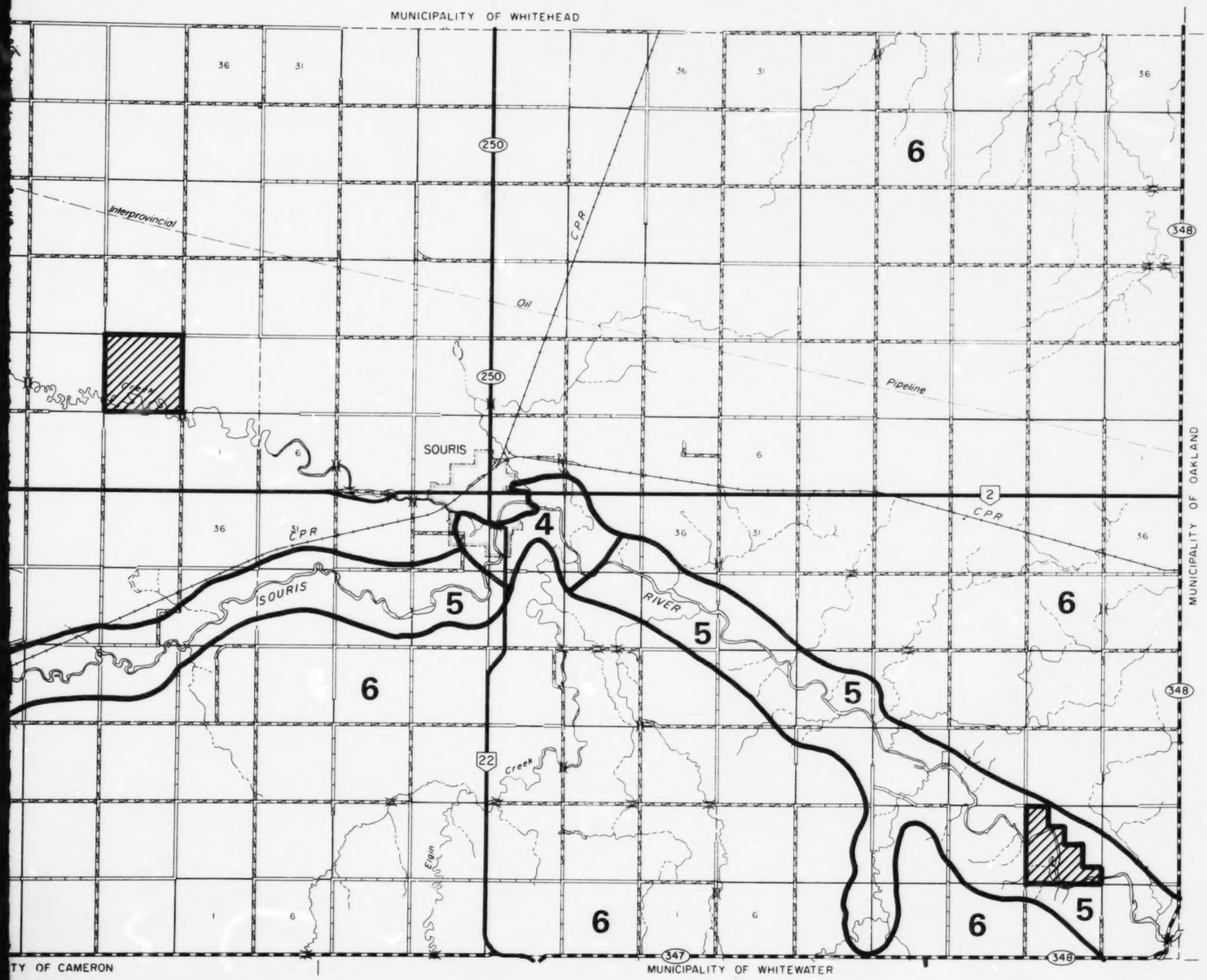
In the Souris-Glenwood Planning District there are 412 hectares of Crown land, representing approximately 0.7 percent of the land base in the District (Map 1).

PRESENT COMMITMENTS

In the Souris-Glenwood Planning District, all of the parcels of Crown land are committed to agricultural use via Forage Lease or Cash Rental Lease.

However, it must be noted that the commitment of Crown land is a dynamic process with leases and permits being issued, expiring, being renewed, cancelled and dropped. This occurrence is a day-to-day administrative process being actioned by various Departments of Government.


MUNICIPALITY OF WHITEHEA
Tp.8
Tp.7
MUNICIPALITY OF SIFTON
MUNICIPALITY OF CAMERON
Interprovincial
Oil
Pipe
Creek
SOURIS
CPR
SOURIS
Elgin
Creek
21
2
250
250
454
22
347
4
5
6
R. 22W
R. 21W



R.22W R.21W R.20W

SOURIS - GLENWOOD PLANNING DISTRICT

Map 1.
Recreation Capability (C.L.I.) and Crown Lands.

4 Recreation Capability

Crown Land

MUNICIPALITY OF OAKLAND

1 0 1 2 3 4 5 6 7 km.

1 0 1 2 3 4 5 MILES

MUNICIPALITY OF WHITEHEAD

MUNICIPALITY OF SIFTON

MUNICIPALITY OF CAMERON

MUNICIPALITY OF WHITEWATER

MUNICIPALITY OF OAKLAND

Tp.8

Tp.7

R. 22W

R. 21W

R. 20W

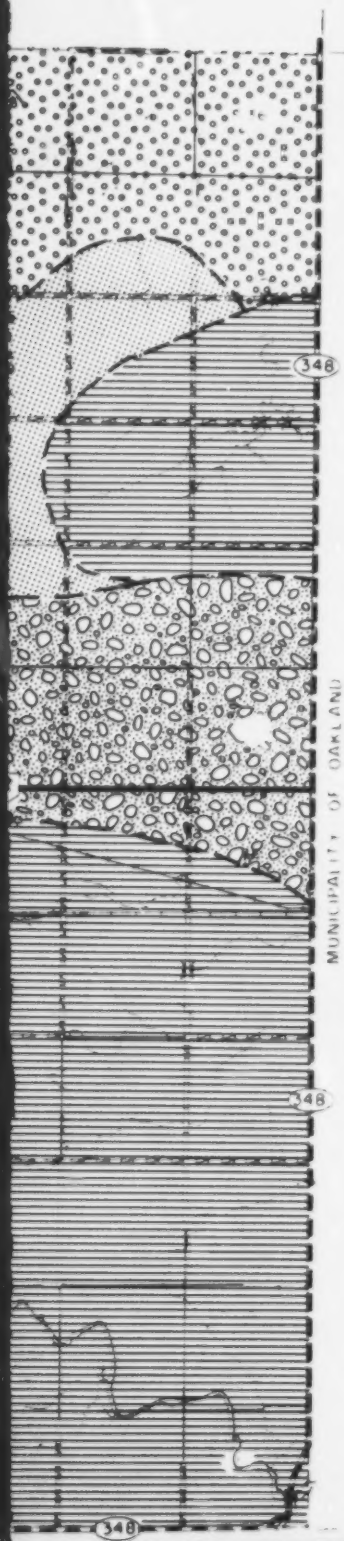
SCALE IN KILOMETRES

LEGEND

- ***LENSES OF SAND*** OF THE AREA THE CONSIDERABLE TE TO FIND SATISFAC DOMESTIC REQUIRE IS LESS THAN I. INDICATIONS ARE BURIED BEDROCK SEVERAL LITRES GENERALLY IS
- ***SAND*** : IN THE NO DISTRICT THE SA AND SOME OF THE EXTENSIVE ; THE RANGES FROM 0. I.G.P.M.), WATER THE SAND AQUIFER OF THE DISTRICT SAND IN CLAY A POTENTIAL YIEL 0.5 L/S TO 3.0 QUALITY IS FAIR
- ***EXTENSIVE SAND*** MORE OR LESS CO IN MOST OF THIS I.0 TO 2.0 L/S (END OF THE AQUIFE COULD BE UP TO QUALITY IS FAIR
- ***SHALE*** ; THE AQU ZONES IN THE SHAL IS 0.5 L/S (6 I.G FRACTURED SHALE (90 I.G.P.M.) HAVE BURIED BEDROCK OF THE SHALE AQ IS COMMON IN DEEP

Approximate Defined — ***MAJOR BURIED B***

DRAWN F.B.R.	Manitoba Natural Resources	SOU
CHECKED	Water Resources	
PREPARED M. Rutulis	SUBMITTED	APPROVED
		SCALE AS SHOWN



LEGEND

- ***LENSES OF SAND AND GRAVEL*** : IN SOME PARTS OF THE AREA THE AQUIFERS ARE SCARCE AND CONSIDERABLE TEST DRILLING MAY BE REQUIRED TO FIND SATISFACTORY SUPPLY FOR FARM AND DOMESTIC REQUIREMENTS ; WELL YIELD GENERALLY IS LESS THAN 1.0 LITRES / SECOND (13 I.G.P.M.) INDICATIONS ARE THAT A FEW AQUIFERS IN THE BURIED BEDROCK VALLEY AT SOURIS MAY YIELD SEVERAL LITRES PER SECOND ; WATER QUALITY GENERALLY IS FAIR TO POOR.

- ***SAND*** : IN THE NORTHWESTERN PART OF THE DISTRICT THE SAND AQUIFERS ARE COMMON AND SOME OF THEM ARE FAIRLY THICK AND EXTENSIVE ; THE POTENTIAL YIELD OF WELLS RANGES FROM 0.5 L/S TO 20 L/S (6 - 260 I.G.P.M.), WATER QUALITY IS FAIR TO EXCELLENT. THE SAND AQUIFERS IN THE NORTHEASTERN PART OF THE DISTRICT ARE FORMED BY LENSES OF SAND IN CLAY AND SILT DEPOSITS ; THE POTENTIAL YIELD OF WELLS RANGES FROM 0.5 L/S TO 3.0 L/S (6 - 40 I.G.P.M.), WATER QUALITY IS FAIR TO POOR.

- ***EXTENSIVE SAND AND GRAVEL*** : THE AQUIFER IS MORE OR LESS CONTINUOUS OVER THE INDICATED AREA ; IN MOST OF THIS AREA WELL YIELD RANGES FROM 1.0 TO 2.0 L/S (13 - 26 I.G.P.M.) BUT AT THE WESTERN END OF THE AQUIFER THE POTENTIAL WELL YIELD COULD BE UP TO 16 L/S (200 I.G.P.M.) WATER QUALITY IS FAIR TO GOOD.

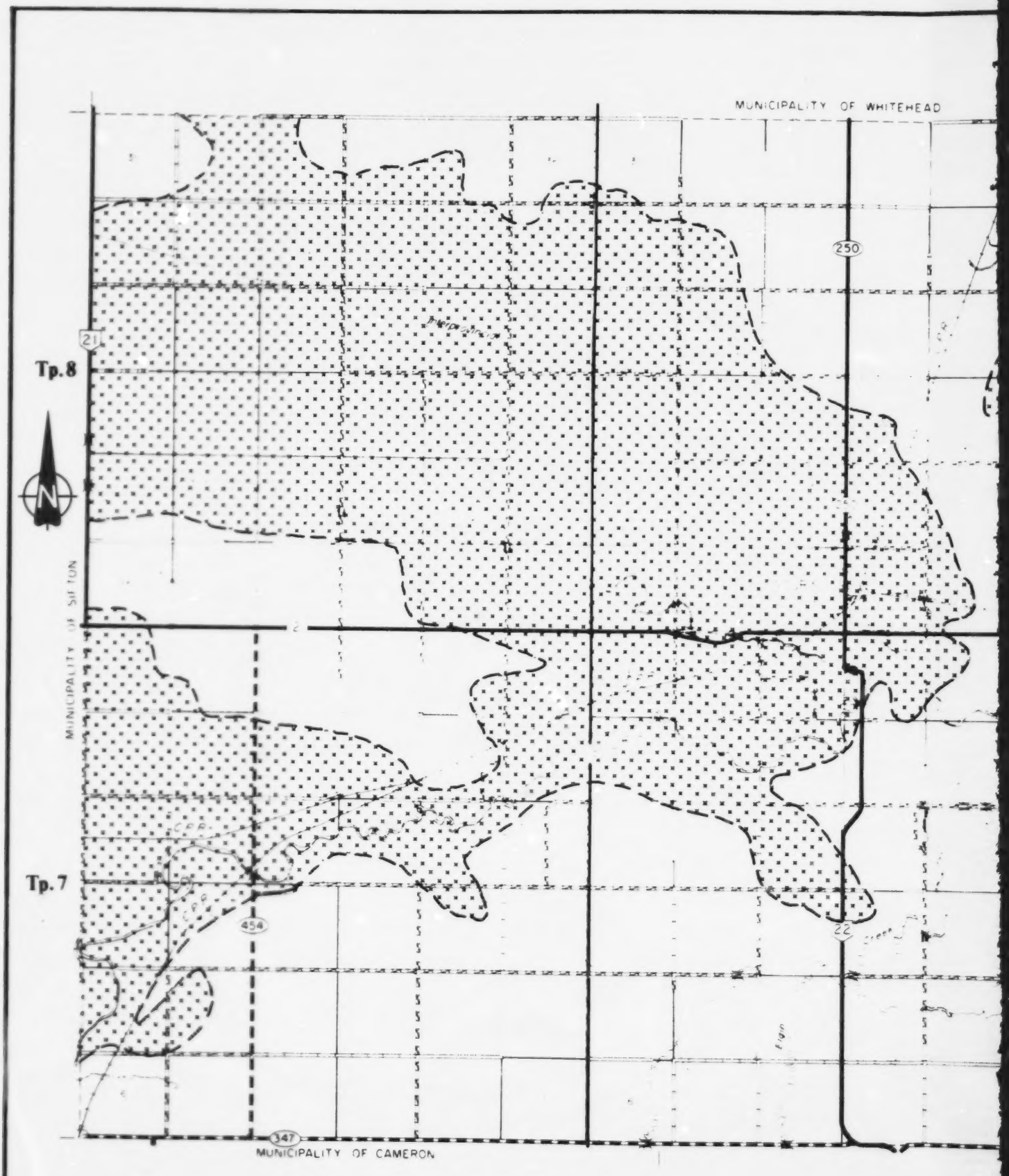
- ***SHALE*** : THE AQUIFERS CONSIST OF FRACTURED ROCK ZONES IN THE SHALE BEDROCK ; WELL YIELD GENERALLY IS 0.5 L/S (6 I.G.P.M.) OR LESS ; A FEW HIGHLY FRACTURED SHALE AQUIFERS YIELDING UP TO 6 L/S (90 I.G.P.M.) HAVE BEEN REPORTED ADJACENT TO THE BURIED BEDROCK VALLEY ; WATER QUALITY IN MOST OF THE SHALE AQUIFERS IS POOR, SALINE WATER IS COMMON IN DEEPER WELLS.

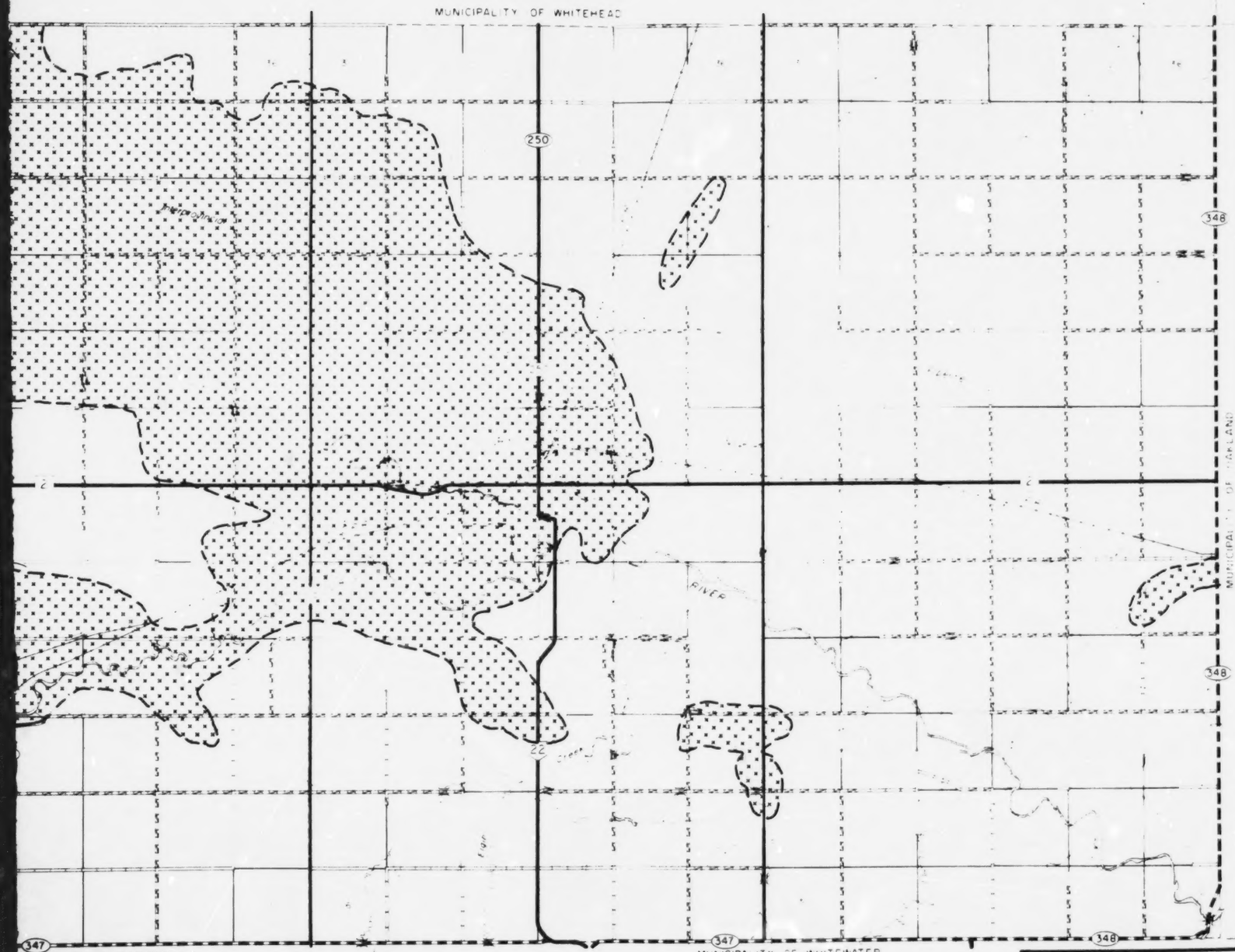
Approximate
Defined

- ***MAJOR BURIED BEDROCK VALLEY***

MAP 2

DRAWN B.R.	Manitoba Natural Resources Water Resources	SOURIS-GLENWOOD PLANNING DISTRICT
CHECKED		AQUIFERS
PREPARED Rutulis	SUBMITTED	APPROVED
	SCALE AS SHOWN	DATE 83 08 27
	SHEET OF	FILE NO. 90-1-7-1135


MUNICIPALITY OF WHITEHEAD
250
21
Tp.8
N
MUNICIPALITY OF SHELTON
Tp.7
454
22
347
MUNICIPALITY OF CAMERON
R. 22W
R. 21W



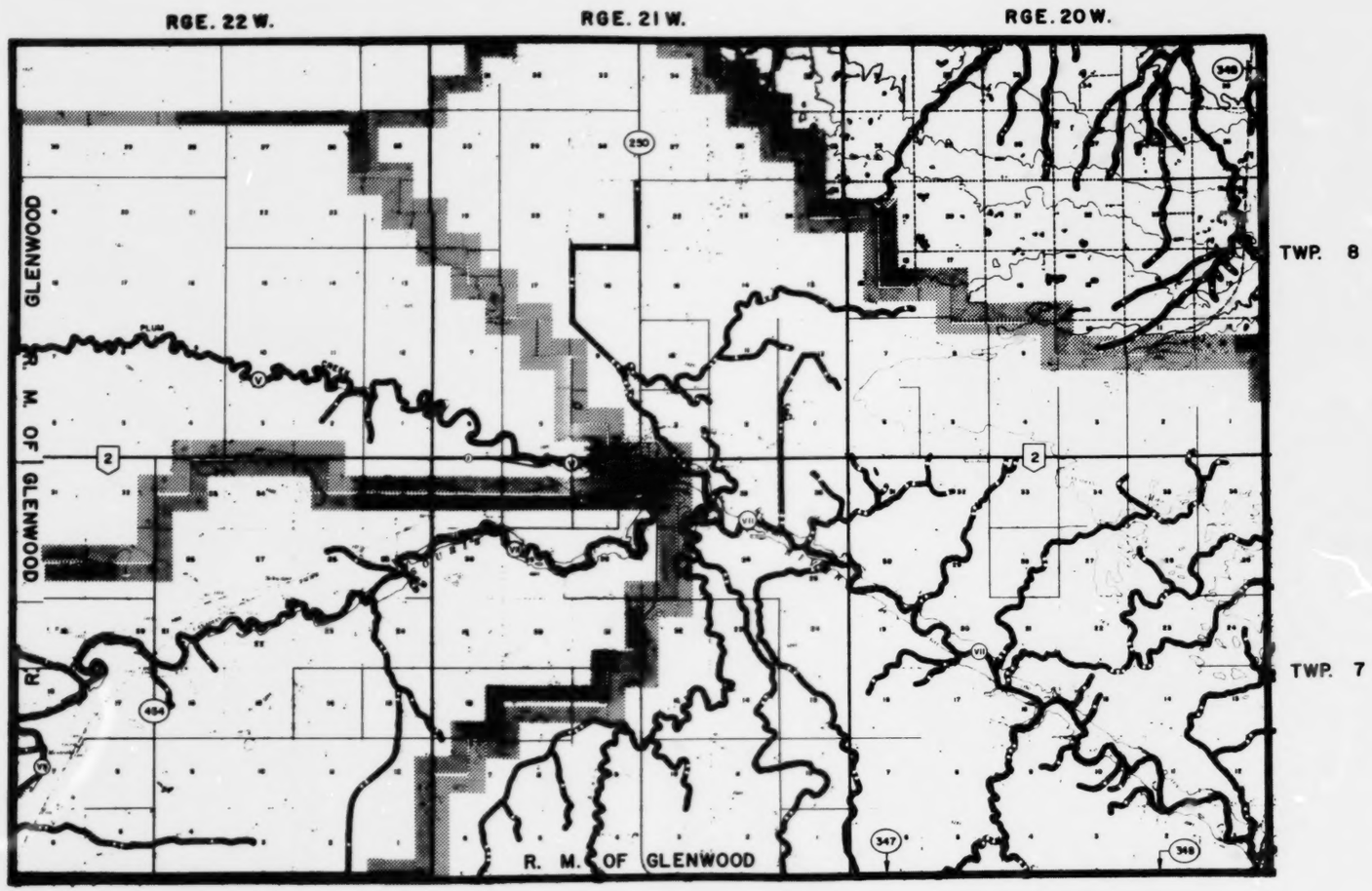
– GROUNDWATER POLLUTION HAZARD AREA

NOTE: Detailed field investigations may prove that groundwater pollution hazard does not exit in some of the areas or parts thereof shown on the map.

Modified after: M. Rutulis, 1983
Groundwater Pollution Hazard Map
Virden Area, Manitoba

MAP 3

DRAWN F.B.R.	Manitoba Natural Resources Water Resources	SOURIS-GLENWOOD PLANNING DISTRICT	
CHECKED		GROUNDWATER POLLUTION HAZARD MAP	
PREPARED M. Rutulis	SUBMITTED	APPROVED	SCALE AS SHOWN / DATE 86 08 27 / SHEET OF / FILE NO. 90-1-7-1135



SOURIS - GLENWOOD PLANNING DISTRICT

Map 4. Surface Drainage Systems

LEGEND

WATER COURSE
- 1st ORDER DRAINS
- 2nd ORDER DRAINS
- 3rd ORDER DRAINS
- 4th ORDER DRAINS
- 5th ORDER DRAINS
- 6th ORDER DRAINS
- 7th ORDER DRAINS

- CONSERVATION DISTRICT BOUNDARY
- LIMITS OF DRAINAGE AREA
- CITY, TOWN AND MUNICIPAL BOUNDARIES
- PROVINCIAL TRUNK HIGHWAYS (2)
- PROVINCIAL ROADS (513)
- FOREST OR PARK BOUNDARIES

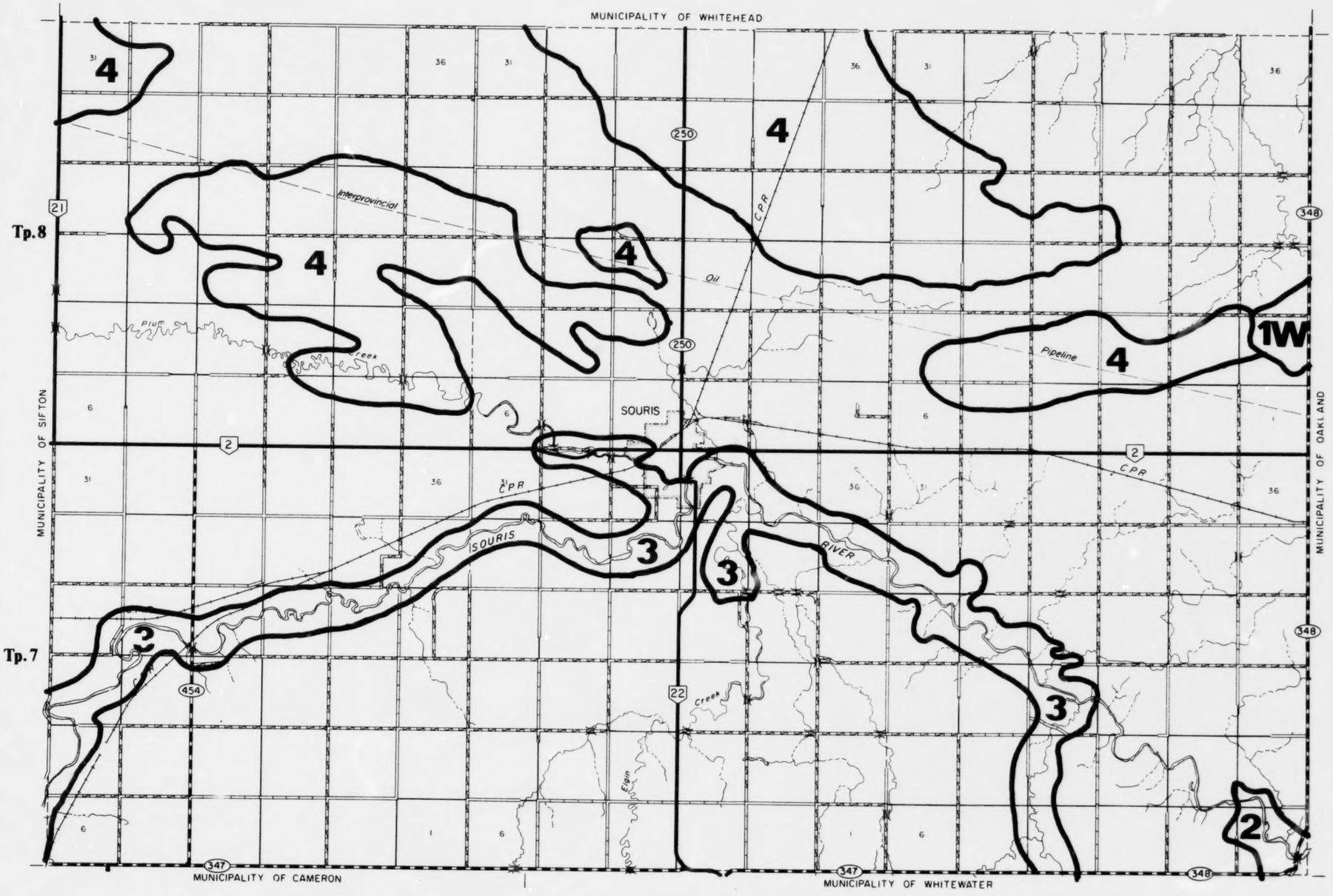
SCALE IN MILES
0 1 2 3 4 5

SCALE IN KILOMETRES
0 1 2 3 4 5 6 7 8

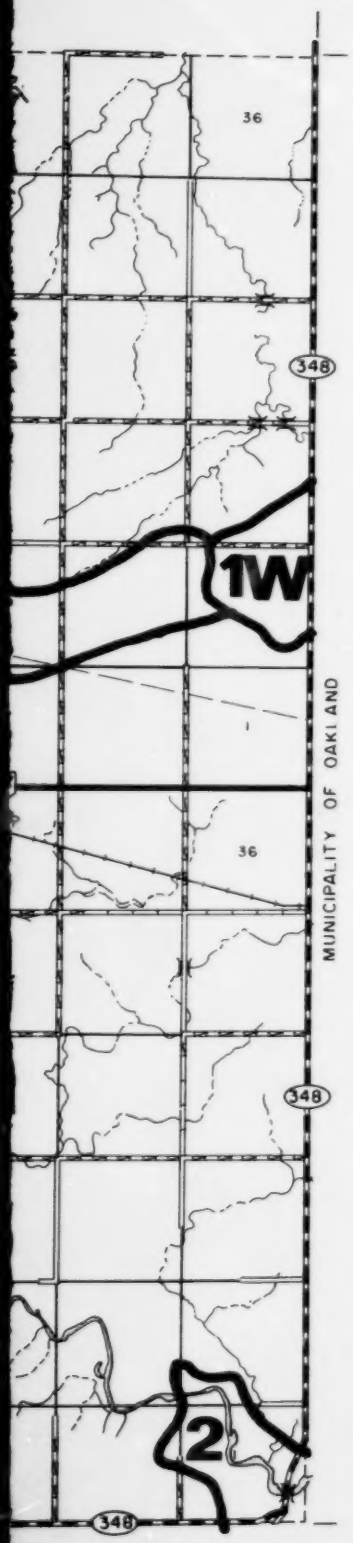
SOURIS PLANNI

Map 5
Ungulate C

1 Ungulate



SOURIS - GLENWOOD PLANNING DISTRICT

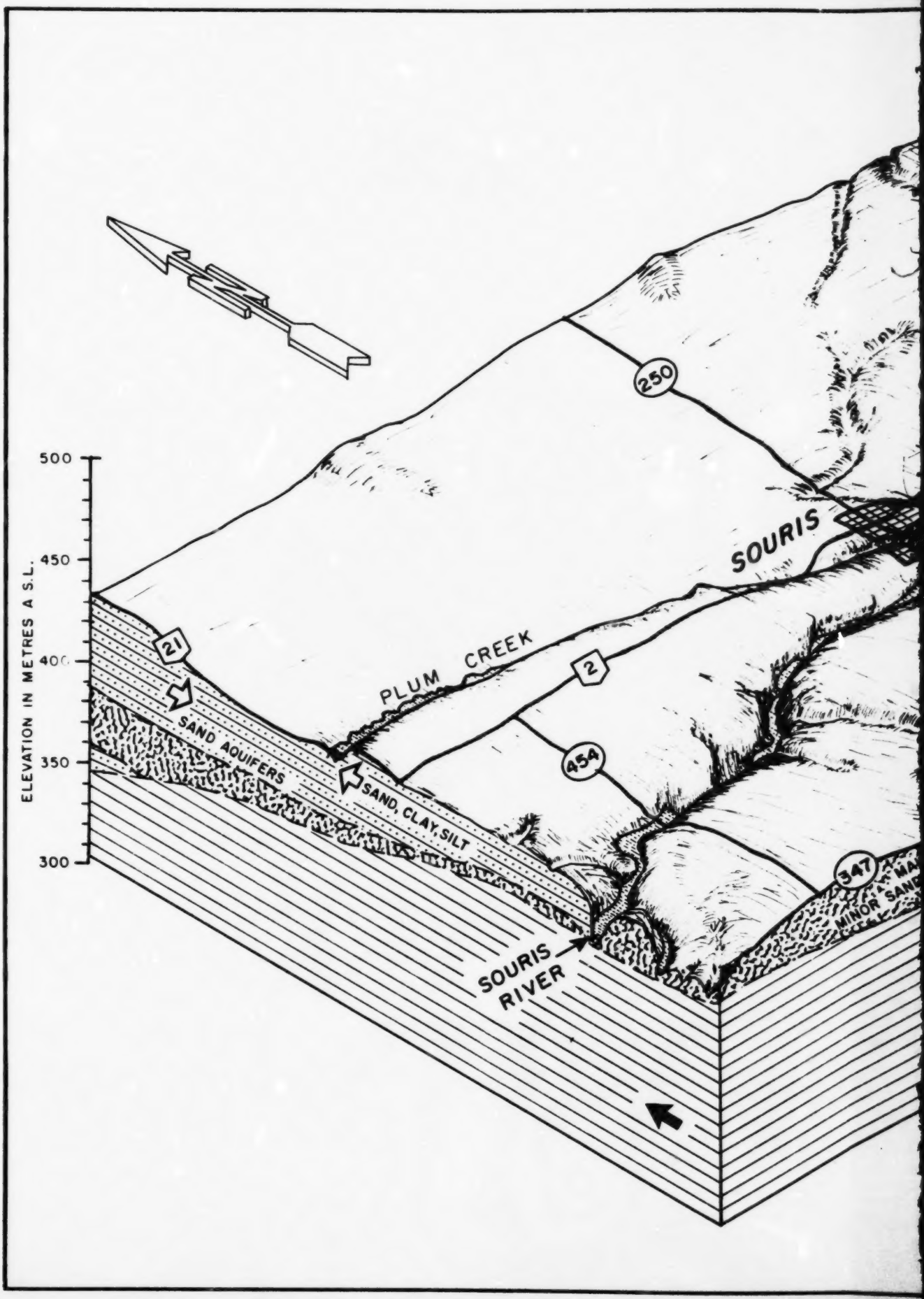


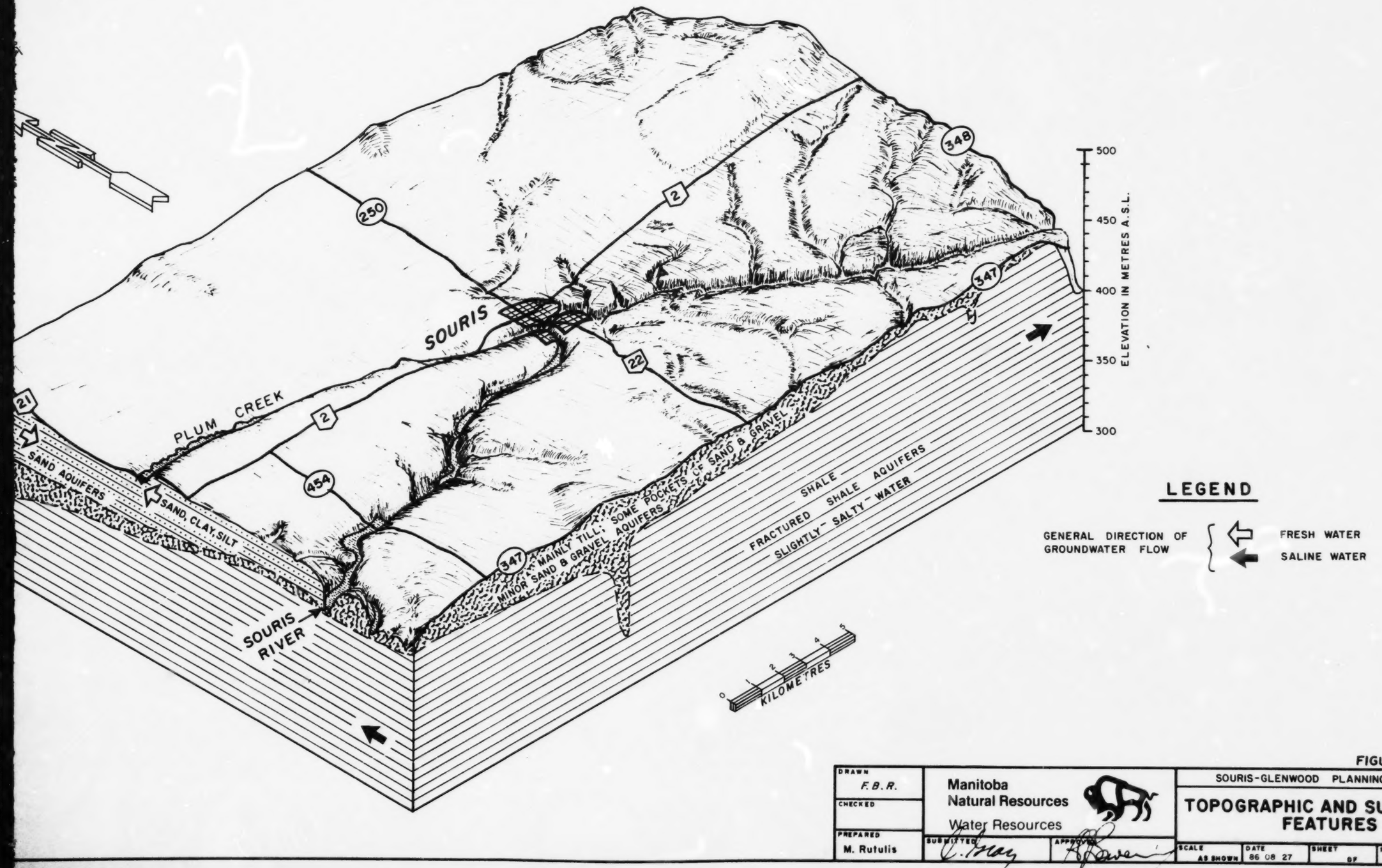
Map 5
Ungulate Capability (C.L.I.)

1 Ungulate Capability (Classes 1W, 2, 3, 4.)

1 0 1 2 3 4 5 6 7 km.

1 0 1 2 3 4 5 MILES


500
450
400
350
300
ELEVATION IN METRES A.S.L.
250
SOURIS
PLUM CREEK
21
2
454
347
SAND AQUIFERS
SAND, CLAY, SILT
SOURIS
RIVER



LEGEND

GENERAL DIRECTION OF GROUNDWATER FLOW

- FRESH WATER
- SALINE WATER

FIGURE 1

DRAWN: F.B.R.	Manitoba Natural Resources Water Resources	SOURIS-GLENWOOD PLANNING DISTRICT	
CHECKED:		TOPOGRAPHIC AND SUBSURFACE FEATURES	
PREPARED: M. Rutulis	SUBMITTED: C. Gray	APPROVED:	SCALE: AS SHOWN; DATE: 86 08 27; SHEET: OF; FILE NO: 90-1-7-1135